Geophysical Research Abstracts
Vol. 14, EGU2012-14311, 2012
EGU General Assembly 2012

A numerical study for the electromagnetic scattering of an elliptically polarized plane wave by a concentric spherical object in a dissipative medium

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A numerical study for the electromagnetic scattering of an elliptically polarized plane wave by a concentric spherical object in a dissipative medium is presented, implemented in a Matlab code. A truncation criterion of the resolving linear system, and its impact on the accuracy and the numerical efficiency of the code, is established via comparisons with analytical and numerical results reported in the literature. Moreover, the agreement with simulations, performed through a Finite Element Method commercial software (Comsol), is shown, with reference to some typical scenarios of buried sphere detection.